

G.M.T. 1898 Nov. 13. h m	Mag.	From	Path	To.	Notes.	Observ
10 53	I	...	Very short, 1°	in Reticulum, direction Achernar to Canopus, sporadic		I.
10 54	I	...	Slow, direction θ Orionis to Sirius, but the path was <i>much further south</i> , in Antlia. Two others seen	simultaneously (all Orionids)	"	"
II 0 3	125°-59°	129°-59°	1°, near ε Argus towards δ Velorum (Orionid)			"
II 3 4	...	In Chameleon. Direction from Orion				"
II 4 3	...	In Antlia, direction from Canopus, 3°. Sporadic				"
II 20 3	...	In Volans, 5°, Leonid				"
II 42 3	93-55	II 2-79	5°, Very swift, δ Pictoris to ε Mensæ. Leonid			"
II 54 I	...	Slow, 15°, in Antlia, direction from Orion				"
II 2 6	...	...	Gave up.			

*The November Meteors, 1898.*

(Communicated by the Astronomer Royal for Scotland.)

Except in the early part of the night of the 13th, the weather was very unfavourable for the observation of the November meteors on the dates of the two principal showers. Watch was kept for the *Leonids* on the 13th, 14th, and 15th, with the results tabulated below. The observers were R. Copeland, T. Heath, and A. J. Ramsay.

On the 24th watch was kept for the *Bielids* from dusk until past midnight, but the sky was overcast all the time and rain fell at intervals. Although the moon was occasionally seen dimly through misty clouds, no stars were at any time visible. Professor Tacchini has kindly informed me that the sky was fairly clear at Rome from 5<sup>h</sup> to 7<sup>h</sup>, and especially so towards the east, but that there was an entire absence of the *Andromeda* meteors. At all the other stations from which I have heard, the sky was overcast.

Date.	Observer.	Duration of Watch.	From—To.	Result.
1898. Nov. 13	R. C.	2 <sup>h</sup> 11 <sup>m</sup> II <sup>h</sup> 17 <sup>m</sup> to 13 <sup>h</sup> 28 <sup>m</sup>	One Leonid at 12 <sup>h</sup> 36 <sup>m</sup> 56 <sup>s</sup> ± G.M.T. from direction of the radiant across α Canum Ven. Nine other meteors, within 30° of the head of Leo, of which only three appeared to come from the radiant.	
	T. H.	1 <sup>h</sup> 30 <sup>m</sup> II <sup>h</sup> to 12 <sup>h</sup> and 13 <sup>h</sup> 30 <sup>m</sup> to 14 <sup>h</sup>	One Leonid at 13 <sup>h</sup> 33 <sup>m</sup> 36 <sup>s</sup> ± G.M.T. from 149° + 25° to 152° + 36°, mag. 2, colour blue. Three smaller meteors with short paths in neighbourhood of Leo.	
	A. J. R.	1 <sup>h</sup> 33 <sup>m</sup> At intervals be- tween 11 <sup>h</sup> 35 <sup>m</sup> and 13 <sup>h</sup> 50 <sup>m</sup>	One Leonid and five other meteors directed towards the constellation Leo.	

Date.	Observer.	Duration of Watch.	From—To.	Result.
1898.				
Nov. 14	A. J. R.	4 <sup>h</sup> 15 <sup>m</sup>	10 <sup>h</sup> 45 <sup>m</sup> to 15 <sup>h</sup>	No meteors seen. Very cloudy up to 12 <sup>h</sup> 15 <sup>m</sup> , and then completely overcast. Slight rain at 13 <sup>h</sup> .
	T. H.	2 <sup>h</sup>	11 <sup>h</sup> to 13 <sup>h</sup>	No meteors seen. Sky cloudy.
	R. C.	44 <sup>m</sup>	17 <sup>h</sup> to 17 <sup>h</sup> 44 <sup>m</sup>	Sky clear overhead, although cloudy up to altitude of 20°. Three well-marked Leonids (1–2 mag.), starting 20° from radiant, of which two moving towards tail of Ursa Major and one towards Orion. Another meteor (1 mag.) from end of tail of Ursa Major towards Leo.
Nov. 15	A. J. R.	5 <sup>h</sup> 35 <sup>m</sup>	11 <sup>h</sup> 25 <sup>m</sup> to 17 <sup>h</sup>	No meteors. Sky cloudy all night.

On the 13th R.C. also saw two large bolide-like meteors fall to the south from a point overhead, and a resident on Blackford Hill saw five large meteors fall into the constellation *Cetus* from a direction S.E. of the zenith. Most of these could be referred to a radiant near *Pollux*.

The Rev. A. Mackay, Westerdale Manse, Halkirk, Caithness, has written to me that on November 14 in clear intervals between 11<sup>h</sup> 16<sup>m</sup> and 13<sup>h</sup> 23<sup>m</sup> he saw fourteen meteors in all, of which eleven were possible *Leonids*.

A whole-plate camera equatorially mounted and provided with a driving clock was kept in readiness each night, under the care of A. J. R.; but no plates were exposed owing to the scarcity of meteors.

*Observations of the Leonids, 1898 November, made at the Cambridge Observatory. By Arthur R. Hinks, B.A.*

(Communicated by Sir Robert Ball.)

In my attempt to observe the *Leonids* this year I was fortunate in having the help of the members of the class to which I have had the pleasure of teaching practical astronomy this term. To Messrs. R. C. Maclaurin, Fellow of St. John's College; L. N. G. Filon, advanced student, King's College; H. E. Wimperis, advanced student, Caius College; R. Casson, A. B. Field, J. H. Field, and M. Walker, undergraduates of St. John's College, my thanks are due for their energetic help under very depressing circumstances.

Our programme was to watch from 11<sup>h</sup> 0 until dawn on November 13, 14, 15, and to attempt three things: a continuous count of the number of meteors visible per five minutes; a record of as many paths as possible from visual observations; and a